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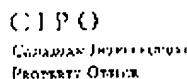
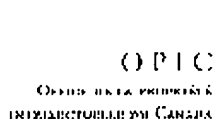
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(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Process for Conducting Secure Electronic Transactions Over Electronic Media

(72) Durward, James - Canada ;

(71) Same as inventor

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Notice: This application is as filed and may therefore contain an incomplete specification.



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**2167543**

**A Process for Conducting Secure Debit and Credit Transactions Over Long Distance Electronic Media.**

**Abstract**

The invention is a process for causing credits or debits to accumulate to a credit or debit card, over any long distance electronic medium, where the holder of the credit or debit card is not required to transmit the actual credit or debit card number, either in an encrypted or non-encrypted form, over the said long distance medium. In the foregoing and hereinafter, "long distance electronic medium" and "long distance electronic media" are defined as any electronic connection that uses either a non-dedicated communications channel or is greater than 50 miles in length, such as, but not limited to, the Internet.

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**The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:**

1. A *process*, which may be, but is not necessarily, in the form of a computer program, for allowing secure long distance electronic media credit or debit card transactions, where "long distance electronic media" is defined as any electronic connection that uses either a non-dedicated communications channel or is greater than 50 miles in length.
2. A *process* as defined in Claim 1, wherein a purchasers credit or debit card information is deposited with a third, and in some cases a fourth, participant.
3. A *process* as defined in Claim 1 where charges or credits, as the case may be, are entered into a purchasers charge or debit account without requiring the transmittal of that purchasers encrypted or non-encrypted actual credit or debit card numbers over long distance electronic media.
4. A *process* as claimed in Claim 2 where the third, and fourth if applicable, participants are neither the purchaser nor the seller in a purchase-sale transaction involving a purchaser and a seller.
5. A *process* as claimed in Claim 2 where the purchasers actual credit or debit card numbers, encrypted or non-encrypted, are not sent over any long distance electronic media, as defined in Claim 1, in order to be deposited with the third, and in some cases the fourth, participant.

Specification

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This invention relates to an electronic payment process for making secure debit or credit transactions over various long distance electronic media such as, but not limited to, the Internet. The Internet is a rapidly-expanding world-wide computer network with over 20 million users which is expected to become a substantial purchasing forum over the coming years. In particular, a section of the Internet known as the World Wide Web ("WWW") is experiencing tremendous growth rates due to its graphical user interface and ease of use. Already there are significant numbers of users conducting business transactions and purchases on-line. Despite the tremendous commercial potential of the Internet, studies have clearly shown that users are very dissatisfied by a lack of security in their transactions due to the nature of the underlying networking technology employed by the Internet. This lack of security is by far the main concern of users wishing to conduct business on the Internet.

The primary security concern is that a credit and/or debit card number and Personal Identification Number ("PIN's") could be intercepted by any number of unauthorized persons on the erratic journey which the credit or debit card number makes on its way from the user to its destination. This security issue is a major fundamental obstacle in the drive to commercialize the Internet. There is currently a significant amount of energy being devoted to various encryption methods in order to secure the transfer of confidential data over the Internet and other electronic media. The idea behind encryption is that a users credit card or debit card number is turned into a code using a mathematical formula that acts like a lock. The user has a unique key to the lock so the credit or debit card number can be sent over the Internet and unlocked at the destination. Keys vary in complexity but so far, all keys except for top-secret military keys not available for use outside the USA, have proved vulnerable to unauthorized decoding. My invention uses a different and unique approach to transfer the value of the credit or debit card payment without the requirement of transferring the credit or debit card numbers themselves.

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Previous methods for attempting to provide secure debits or credits over long distance electronic media are divided into two categories:

1. conventional transaction methods; and
2. new style transaction methods.

Conventional transaction methods include:

- a) direct payment by credit or debit card over the Internet. This requires the user to transmit his actual credit or debit card number over the Internet;
- b) selecting an item from a World Wide Web ("WWW") Page and then sending a cheque or money order for payment using physical delivery of the payment instrument; and
- c) selecting an item from the WWW, then going off-line to telephone the order in, again transmitting the actual credit or debit card number over electronic media.

In case "a", research has shown that users do not want to transmit their credit card information over the Internet and this creates a significant barrier to commerce. In cases "b" and "c", the user is subjected to significant inconvenience due to the fact that the ordering process is interrupted when the user goes off-line. This is also a significant barrier to on-line commerce, particularly with regard to impulse purchases.

New Style transaction methods include:

- a) DigiCash
- b) NetChex
- c) Ecash

All of these systems have the disadvantage of either forcing the customer to open a special bank account at a distant, likely unknown, bank, or completing a complicated pre-registry process. In all cases the user is substantially inconvenienced. Currently, there is no dominant payment system for Internet commerce as the entire industry is in its formative stages.

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### The Inventive Idea

I have found that these disadvantages may be overcome by establishing a manual or automated process wherein a third participant, and in some cases a fourth participant, other than the credit or debit card holder or the vendor, is introduced into the transaction loop. The transaction loop is defined as where a credit or debit card holder is purchasing something from a vendor, and that the third, and in some cases the fourth, participant's role is to collect up and transact debits or credits, as the case may be, on the credit or debit card holders debit or credit card, or the numbers thereon, that are held by the third participant, or in some cases the fourth participant, as a matter of business course. The introduction of a third, and in some cases a fourth, participant into the transaction loop allows the entire transaction to occur by utilizing the billing system that is currently resident, or can be established, with the third, or in some cases the fourth, participant without having to transmit, over long distance electronic media, the customers credit or debit card numbers. Since the actual credit or debit card numbers are never transferred over long distance electronic media, they cannot be accessed by unauthorized persons and the transaction is held secure to the threat of unauthorized usage due to breaches of security of the electronic media itself. The underlying basis of the invention is the understanding that in order for an entity to conduct transactions through, on, or over a long distance electronic medium, that entity must itself be operating through, on, or over that long distance electronic media and if the entity is operating through, on, or over the long distance electronic media, it is likely that a billing procedure has been previously established at the point of the entities entry onto the long distance electronic media in order to charge the entity for access to the long distance electronic media.

### Description of the Invention

#### Definitions:

1. The "Client" is a process that communicates information to the SERVER.
2. The "SERVER" is a process that automates the overall function of the invention.
3. "AP" means any entity, individual or corporate, which is the entry point to the long distance electronic media.
4. "long distance electronic media" means any electronic connection that uses either a non-dedicated communications channel or is greater than 50 miles in length.



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The following is an explanation of the overall inventive process:

1. Customer notifies merchant of purchase request;
2. Merchant notifies customer of accepted request;
3. Merchant notifies the SERVER of the order, by Client, including, but not limited to, the following data:
  - a) Merchant #;
  - b) Customer Email address;
  - c) Invoice amount;
  - d) Merchant Invoice #;
  - e) last four digits of client credit card #;
4. The SERVER loads the request into its database;
5. The SERVER sends a Client message to the customer notifying him of an imminent charge to his credit card:
  - a) if the customer notifies the SERVER, by Client, that the order is fraudulent, or he wants to cancel the order, the SERVER informs the merchant Client to strike the order from the merchant books and the SERVER also deletes the order from its database; or
  - b) if the customer does not notify the SERVER of a false order within 24 hours, then;
6. The SERVER sends the order to the AP, by Client, so the order can be billed to the customers charge card.  
The following data is sent to the AP:
  - a) User Email Address;
  - b) Billing amount; and
  - c) last 4 digits of the charge card # (not the whole number, just the last four digits)
7. When the AP receives the billing data via the Client, he matches the last four numbers of the customers credit card numbers with those on file;
  - a) if there is no match, or if the credit or debit request is rejected, the AP notifies the SERVER by Client, and the SERVER notifies the Merchant, by Client, and sends a message to the customer, by Client, notifying him of the problem; or
  - b) if there is a match, the AP bills the customer credit card for the specified amount;
8. Within a specified time period, the AP sends, by a common delivery method, billed and paid proceeds to the SERVER bank account;
9. The AP notifies, by Client, the SERVER as to which customers bills have been paid;
10. Upon receipt of funds of the paid customer bills to its bank account, the SERVER issues distribution instructions to its bank or other institution, using a Client, instructing distribution of the funds to the appropriate merchants;
11. The Charge or Debit card company bills the customer through traditional channels;
12. The merchant ships the merchandise.

The aforementioned steps comprise a process of allowing transactions to occur over long distance electronic media without transferring actual encrypted or non-encrypted credit or debit card numbers over the long distance electronic media. This improvement over the current methods of conducting transactions over long distance electronic media is my invention.





**Graphic Depiction of a Process for Conducting Secure Debit or Credit Transactions Over Electronic Media.**

The diagram illustrates a payment system architecture with the following components and flow:

- Components:**
  - SERVER**: Contains nodes 4 and 5A.
  - MERCHANT**: The entity initiating the transaction.
  - CUSTOMER**: The entity providing payment.
  - A.P. (Acquiring Processor)**: Contains nodes 7 and 7B.
  - CREDIT OR DEBIT CARD COMPANY**: The entity processing the card payment.
  - SERVER BANK**: The entity managing the server's bank account.
- Flow of Operations (Numbered Steps):**
  - 1**: Merchant sends data to Customer.
  - 2**: Customer sends data to Merchant.
  - 3**: Merchant sends data to Server (3A).
  - 4**: Server receives data (4).
  - 5A**: Server sends data to Customer (5A).
  - 6**: Server sends data to A.P. (6A).
  - 7**: A.P. receives data (7).
  - 8**: A.P. sends data to Server Bank (8).
  - 9**: Server Bank sends data to Server (9).
  - 10**: Server sends data to Server Bank (10).
  - 11**: Credit or Debit Card Company sends data to Customer (11).
  - 12**: Customer sends data to Credit or Debit Card Company (12).

January 10, 1996